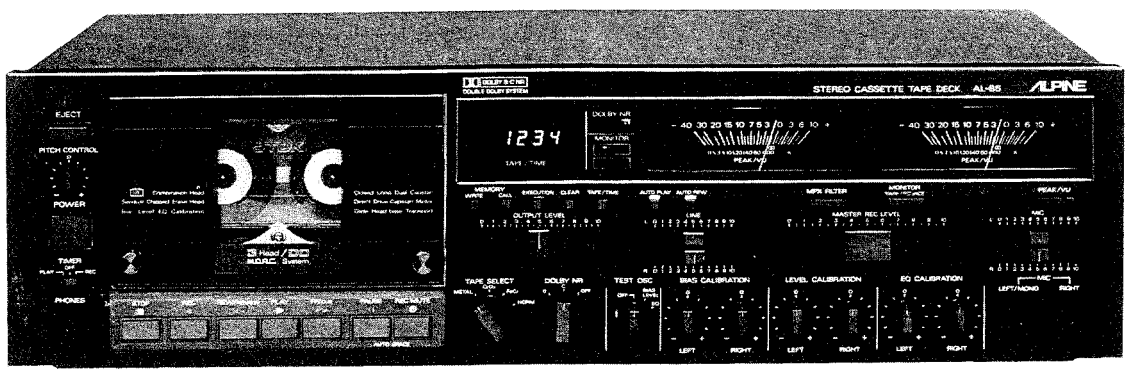
INSTRUCTION MANUAL

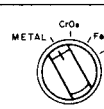
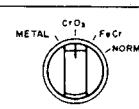
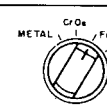
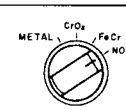
STEREO CASSETTE TAPE DECK AL85



ALPINE

BRAND MARQUE FABRIKMARKE MARCA MARCA	MODEL MODELE MODELL MODELLO MODELO	TAPE SELECT SELECTEUR DE BANDE BANDSORTEN SELEZIONATORE DEI NASTRO SELECTOR DE CINTA
TDK	MA-R, MA SA-X, SA OD, AD-X, AD, ED, D	METAL CrO_2 NORM
MAXELL	MX, MAXELL XLII-S, XLII XLI-S, XL-I, UD, UL, LN	METAL CrO_2 NORM
SCOTCH	METAFINE XS-II, MASTER II, MASTER 70μs MASTER III, CLASSIC MASTER I, MASTER 120μs, CRYSTAL TARTAN, DYNARANGE, HIGE LANDER HIGH ENERGY	METAL CrO_2 FeCr NORM NORM NORM
SONY	METALLIC UCX-S, UCX, EHF, JHF, CR, Chrome DUAD, Ferri Chrome, Fe-Cr AHF, BHF, CHF, SHF, HFX, HF, LNX, C	METAL CrO_2 CrO_2 FeCr NORM NORM
BASF	METAL IV Professional Professional II, Studio II, Chromdioxid, Chromdioxid Super, SCR Professional III, FCR, Ferro Chrom Studio I, Professional I, Performance, LH(I), SLH(I), LN	METAL CrO_2 CrO_2 FeCr NORM NORM
AMPEX	GRAND MASTER II, 20 : 20 + High BIAS GRAND MASTER (I), 20 : 20 + PLUS LO-NOISE	CrO_2 NORM
AUDIO MAGNETICS	HIGH PERFORMANCE II XHE, HIGH PERFORMANCE, TRACS. SUPER	CrO_2 NORM
Agfa	Stereo Chrom Super Chrom, Carat Ferro Color, Super Ferro Dynamic (I)	CrO_2 FeCr NORM
MEMOREX	High Bias MRX_3	CrO_2 NORM
PHILIPS	CHROMIUM FERRO-CHROMIUM SUPER FERRO, FERRO	CrO_2 FeCr NORM
FUJI	FR-METAL, SR, SUPER RANGE METAL FR-II, FX-II, RANGE 4X, UR FR-I, FX-1, DR, ER, FL, RANGE 2, RANGE 4, RANGE 6	METAL METAL CrO_2 NORM NORM
DENON	DXM DX-8, DX-7 DX-5 DX-4, DX-3, DX-1	METAL CrO_2 FeCr NORM

Recorded music tape available in the market (unless otherwise specified). Bande musicale enregistrée disponible sur le marché (à moins qu'il ne soit autrement specifié). Musikkassetten, die auf dem Markt verkauft werden, es sei denw, das andere empfohlen werden. Un nastro registrato delle musiche si può ottenere sul mercato (se non è stato specificato). Cinta musical grabada disponible en el mercado (de no especificarse de otra manera).	NORM
120 μs EQ, NORMAL BIAS	NORM

Position of Tape select switch. Positions du bouton selecteur de bande. Bandsortenwähler. Le posizioni della manopola selettore del nastro. Posición de la perilla de selección de cinta.	METAL	CrO_2	FeCr	NORM
				

* Set the tape select switch according to the kind of the tape so that the general performance of recording and playback can function to the full. Although the equalizer constant in playback is 70 μs for both the METAL, FeCr and CrO_2 tapes, the recording characteristics between those three tapes are slightly different, the recording equalizer characteristics are also different between them.

* Régler le bouton sélecteur de bande en fonction du type de bande utilisée de façon a obtenir les performances optimales à l'enregistrement et à la lecture. Bien que la constante d'égaliseur à la lecture soit de 70 μs pour les bandes METAL, FeCr et CrO_2, les caractéristiques d'enregistrement ainsi que celles d'égaliseur d'enregistrement sont quelque peu différentes entre ces trois bandes.

* Den Bandsortenwähler gemäß der verwendeten Tonbandsorte einstellen, um richtige Entzerrung und Vermagnetisierung bei-Aufnahme und Wiedergabe zu erhalten. Die Wiedergabe-Entzerrung beträgt sowohl bei Reineisen-als auch bei METALL, FeCr und CrO_2-Band 70 μs, wogegen aber die Aufnahme-Entzerrung und die Vormagnetisierung unterschiedliche Werte für diese beiden Tonbandsorten aufweisen.

* Selezionare la manopola selettore del nastro al nastro della cassetta di uso in modo che la prestazione generale di registrazione e di reproduzione sarà ottima. Seppure l'equalizzatore costante, quando la riproduzione è 70 μs, per i nastri METAL, FeCr e CrO_2, le caratteristiche sulla registrazione sono un po' diversi fra di loro. Anche le charatteristiche di equalizzatore sono diversi per la registrazioni fra di loro.

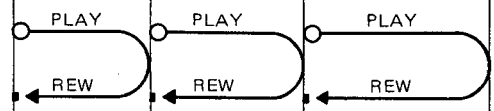
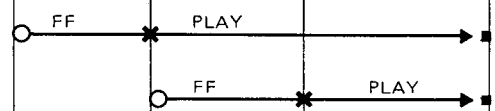
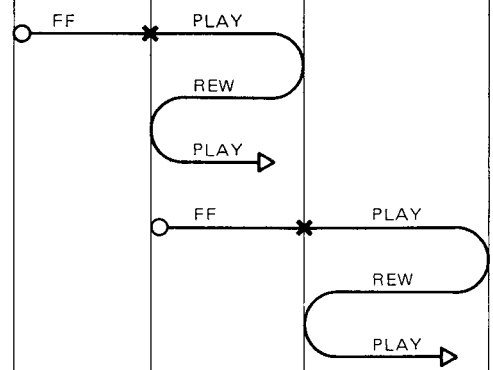
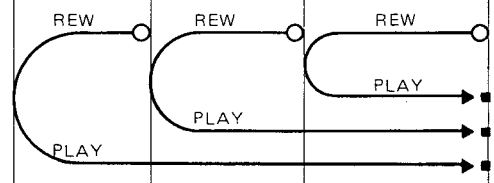
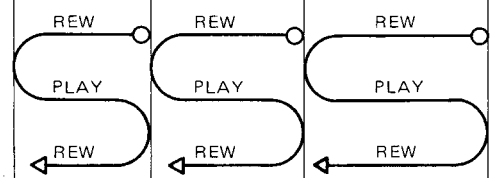
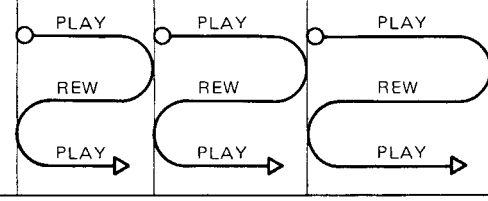
* Regule la perilla del selector de cinta según el tipo de cinta para obtener excelente rendimiento en la grabación y reproducción. Aunque la constante del igualador en la reproducción es 70 μs para las cintas de METAL, FeCr y CrO_2, son ligeramente diferentes las caracteristicas de grabación entre dichas tres cintas. Y las caracteristicas del igualador de grabación son también diferentes.

Table 1/Tableau 1/Tabelle 1/Tavola 1/Tabla 1

COUNTER MEMORY SWITCH OPERATION/UTILISATION DU COMMUTATEUR DE MEMOIRE A COMPTEUR/ BETRIEB DES ZÄHLWERK-MEMORY-SCHALTERS/FUNZIONAMENTO DELL'INTERRUTTORE/OPERACION DEL INTERRUPTOR DE MEMORIA DEL CONTADOR

Switches/Commutateurs/Tasten Commutatori/Interruptores						Tape Motion/Mouvement de band/Bandlauffunktion Scorrimento del mastro/Movimiento de la cinta
REW (◀◀)	PLAY (▶)	FF (▶▶)	EXECU-TION	AUTO PLAY	AUTO REW	BEGIN "0000" "0200" END
		ON				
		ON		ON		FF
		ON			ON	
		ON		ON	ON	
ON						REW
ON					ON	
	ON					
	ON		ON			PLAY
	ON		ON	ON		
	ON			ON		
		ON	ON			FF FF FF
		ON	ON		ON	
ON			ON			REW REW REW
ON			ON		ON	
	ON				ON	PLAY REW
	ON			ON	ON	PLAY REW PLAY
ON				ON		REW PLAY
ON				ON	ON	REW PLAY REW

Table 2/Tableau 2/Tabelle 2/Tavela 2/Tabla 2

Switches/Commutateures/Tasten Commutatori/Interruptores						Tape Motion/Mouvement de bande/Bandlauffunktion Scorrimento del nastro/Movimiento de la cinta
REW (◀◀)	PLAY (▶)	FF (▶▶)	EXECU-TION	AUTO PLAY	AUTO REW	BEGIN "0000" "0200" END
	ON		ON		ON	
		ON	ON	ON		
		ON	ON	ON	ON	
ON			ON	ON		
ON			ON	ON	ON	
	ON		ON	ON	ON	

FF: Avancement rapide/Schnellvorlauf/Avanti Veloce/Avance Rapido
Play: Lecture/Wiedergabe/Riproduzione/Reproduccion
Rew: Rembobinage/Rückauf/Indietro/Reenrollado
Excution: Exécution/Ausführung/Execution/Ejecución
Auto Play: Lecture automatique/Auto start/Automatica Riproduzione/Reproducción automática
Auto Rew: Rembobinage automatique/Auto Rücklauf/Automatico Indietro/Reenrollado automática
Begin: Début/Beginn/Inizio/Comienzo
End: Fin/Ende/Fine/Fin

FEATURES

MORC (Manual Optimum Recording Calibration)

- TEST OSC
- BIAS CALIBRATION
- LEVEL CALIBRATION
- EQ CALIBRATION

Three head system (Fig. 3)

- **Sendust/ferrite combination recording/playback head**
  Living up to its reputation for high quality, high fidelity decks, Alpine applies the Sendust/Ferrite Combination Head developed through its own research, technology and development efforts. For recording, sendust material with its high saturated magnetic flux density properties is used. For reproduction, ferrite material with no eddy current loss and no high frequency loss is used. The head gap is set at 3μ for recording and 0.8μ for reproduction ideal settings for both. Besides manifesting superb sound characteristics, such as for distortion frequency characteristics and dynamic range, it also excells in anti-wear, no aximuth inclination, no track line-out, and no unbalance of head curve height. In order to achieve optimum head and tape contact, the head is given its own original shape. As a result, contour effects have been greatly improved when compared to conventional ferrite/ferrite combination heads. Separate record playback circuits permit monitoring real time recording through the playback head.
- **Dual gap sendust/ferrite junction type erase head**
  Excellent erasing characteristics are achieved because ferrite materials with no high frequency loss is used for the core, and sendust material is used around the head gap areas for their superb high saturation magnetic flux density characteristics. Therefore, even metal tapes can now enjoy clear erasing the new system.

Closed-loop dual capstan mechanism (Fig. 4)

In the Three-Head Tape Deck, the contact between the tape and each head is apt to be inefficient. Cassette tape is equipped with a pad to improve the head contact, but unfortunately, there is only one at the center. And also the combination type-head is used, the effective and stable head contact with only one pad is not sufficient. The AL-90 has solved such difficulty with a closed-loop dual capstan driving system which is the most well established and reliable method. There is the slightest difference in the driving ratio between the two capstan, therefore, the tape is to run between them under a constant tension. The complex vector of the tension provides a stable head contact without any influence of a pad and vibration of the reel shaft. This means that the sound effects have been surprisingly improved.

Optional remote control

An optional remote control unit (Model RU-20B) is available so you can change tape transport modes and even make complete recordings from the comfort of your chair.

Auto play and auto rewind

The auto play feature functions together with the built-in microprocessor and lets you enjoy the convenience of automatic playback immediately after the tape reaches its end during the rewind mode. In a similar manner, the auto rewind feature lets you enjoy automatic rewinding immediately after the tape reaches its end during the playback mode. Both ways, the AL-85 lets you enjoy hands-off enjoyment of taped music.

Record mute

Record mute eliminates unwanted disturbances or commercials during live recording, without interrupting tape travel.

Auto space

When REC MUTE switch is touched after PAUSE switch during recording, a 3-second non-recorded area can be created on the tape automatically.

Pitch control

The tape speed can be controlled within ± 6% during playback. When dubbing, a different sound quality can be arranged by changing the reproduction speed of a deck through recording procedures of another deck.

Double Dolby* C-type NR system

Newly developed C-type noise reduction system provides 20 dB of noise reduction above 1 kHz. With C-type noise reduction, the dynamic range of good cassette tape is improved to the point where in virtually all cases the limiting noise level is no longer that of the tape, but rather that of the program material being recorded and/or the ambient noise of the listening room itself. The C-type system has been designed to incorporate the conventional B-type characteristic. Dolby C-type NR circuit is built in each recording and playback amplifier independently and monitoring can be done through each Dolby NR circuit.

Direct drive mechanism

This system applies a double capstan drive system with the original brushless-coreless FG servo motor. It achieves a very stable wow/flutter value under 0.022%. An exclusive DC motor is used for fast forward and rewind driving.

Quiet and quick transportation

The unit applies the new "quick and quiet" mechanism which achieves very quick and quiet operation of all mechanisms, living up to its claim as using high precision drive mechanisms. For driving the transport section of the mechanism, an exclusive computer has been installed. An exclusive motor, functioning only by command from this computer, has also been installed. No solenoids for transportation driving has been used. As a result, mode switching is achieved only by command of the computer and therefore no switching noise arrises, and high speed switching can also be achieved. Such drive systems are the answers to the dreams of all audiophiles.

Suitable tape tension mechanism

When the power is turned on, the mechanism automatically sets itself in the pause mode for 4 seconds, then it rewinds. This operation ensures safe transportation by removing tape slack and sets the unit at optimum tape tension. During these 4 seconds, the unit will not operate even if any of the function switches are touched. Also during these 4 seconds of pause, the contents memorized in the tape transport drive computer will be cleared, which are left from the previous operation.

DC amplifier

The direct coupling system to the head from the amplifier has been employed without coupling capacitors. Furthermore, in the super low to super high range, low distortion, a wide dynamic range as well as superb phase characteristics have been achieved.

Full auto stop

AL-85 full auto stop mechanism automatically shuts down the deck at the end of tape movement in all tape transport modes to protect the tape from undue stress.

Wide scale (–40 dB ∿ + 10 dB) peak/vu meter

Master/Line/Mic rec level controls

Cue and REVIEW function

Output level control

Mono-microphone recording

4-digit multi-memory tape/time counter

Defeatable MPX filter

TIMER switch is provided with recording mode and playback mode positions.

Illuminated cassette compartment

* Noise reduction system manufactured under licence from Dolby Laboratories Licensing Corporation.
"Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

PRIOR TO OPERATION

• Voltage and frequency setting (See Fig. 5)

Check the power supply voltage and frequency of AC outlet used. Set the voltage and FREQUENCY selector switches provided on the rear panel to the position corresponding to the regulated voltage and frequency. Then, connect the cord and cable. (The voltage selector switch is for multi-voltage only).

• Wiring connections (See Fig. 6)

Ensure wiring connections of AL-85 AC supply cord and pin plug cords with the amplifier. (Refer to "CONNECTIONS".)

• To load and unload cassette (See Fig. 7)

Loading

1. Push EJECT knob to open the cassette door.
2. Insert the desired cassette tape with its tape exposed side facing down and the appropriate label facing toward you into the cassette compartment located on the rear of the cassette door.
3. Push the door to close it. Now, the cassette is placed in position.

Unloading

1. Touch STOP switch.
2. Push EJECT knob to open the cassette door.
3. Take out the cassette.

• Prevention of tape slack (See Fig. 8)

The tape slack may cause troublesome in recording and playback. AL-85 is designed for prevention from tape slack which is automatically wound up by the left reel driven when the tape is loaded. Therefore, usually the adjustment is not required. But, the extremely slack tape must be wound up with such a pencil.

NAMES AND FUNCTIONS OF PARTS ON FRONT PANEL (See Fig. 1)

① **TIMER switch** — Using an audio timer available in the market, recording or playback can be achieved at any desired time. Set to REC position for timer recording, and to PLAY position for timer playback.

② **POWER switch** — When POWER switch is pushed, PAUSE indicator goes on and off for a while and the unit will be kept in the pause mode to facilitate stabilization and protection of internal circuits.

③ **PITCH CONTROL** — This is used to control the tape running speed in the reproducing mode and can change it by up to ±6%. Usually use the control at the center click position ("0" point).
Note: PITCH CONTROL has no effect in the recording mode.

④ **EJECT knob**

⑤ **Cassette Door**

⑥ **Window lighting**

⑦ **MEMORY WRITE switch** — When this switch is touched at the desired position on TAPE counter, its figure is put into memory and it makes it easy to find memorized position of the tape program.

⑧ **MEMORY CALL switch** — When this switch is touched, the memorized figure appears instantly on the counter.

⑨ **MEMORY EXECUTION switch & indicator** — When this switch is touched, its indicator lights up, the memory function becomes effective and the operation is permitted at the memorized position. When this switch is not touched even if the figure is memorized with MEMORY WRITE switch, the memory function does not become effective.

⑩ **CLEAR switch** — The counter display will be cleared to "0000" when this switch is touched. During TAPE display, only figures as TAPE counter will be cleared to 0000 and during TIME display, only figures as TIME counter will be cleared to 00:00.

⑪ **TAPE/TIME switch** — Select TAPE or TIME display on the four digit counter. A colon (:) appears between the 2nd and 3rd figures in TIME display. When POWER is on, TAPE/TIME counter will automatically display as a TAPE counter.

⑫ **AUTO PLAY switch & indicator** — When this switch is pushed with MEMORY EXECUTION switch in the rewind mode, the tape automatically starts to play back at the tape end, at 0000 position or at memorized position. (Refer to "COUNTER MEMORY SWITCH OPERATION".)

⑬ **AUTO REW switch & indicator** — When this switch is pushed with MEMORY EXECUTION switch in the play or record mode, the tape automatically starts to rewind at tape end, at 0000 position or at memorized position. This function does not become effective in the fast forward mode. (Refer to "COUNTER MEMORY SWITCH OPERATION".)

⑭ **MPX FILTER switch** — For recording FM stereo broadcast with NR system, push this switch in. 19 kHz pilot signal and 38 kHz subcarrier are eliminated from the FM stereo signal. For recording or playing back any other source than FM stereo broadcast with NR system, push this switch out.

⑮ **MONITOR switch** —
TAPE (■): This position is used for listening to the signal that has just been recorded on the tape or listening to the playback signal.
SOURCE (▬): This positionis used for listening to the source input signal. When PAUSE switch is touched or REC MUTE switch is kept touching, you can monitor in SOURCE position and not in TAPE position.

⑯ **Meter switch** —
PEAK (■): This position is used for recording level setting.
VU (▬): This position is used for balance adjustment of input/output level in recording and reproducing.

⑰ **MIC level controls (L/R)** — Recording levels from MIC jacks are controlled. When recording only from LINE IN jacks without mixing, slide these controls to 0 position (fully to the left).

⑱ **MASTER REC LEVEL control** — Various left/right adjustments are made with independent controls when recording from MIC jacks and/or LINE IN jacks. But there are times when both

recording levels from MIC and LINE IN are desired to increase or decrease simultaneously during mixing recording. This can be achieved with MASTER REC LEVEL control. Left/right levels can be controlled equally.

⑲ **LINE level controls (L/R)** – Adjusts the recording level from LINE IN jacks. Slide these knobs fully to the left (0 position) when mixing is not desired and recording only from MIC jacks.

⑳ **OUTPUT LEVEL control** – Simultaneously adjust both the left and right outputs to be delivered to the LINE OUT and PHONES jacks.

㉑ **Multi-memory TAPE/TIME counter** – This digital counter provides convenient means of indexing and locating desired sections of the tape together with memory switches. In addition to such a conventional tape counter, the counter indicates the tape running time in play or record mode. The digital time counter advances every second but stops in fast forward or rewind mode.

㉒ **DOLBY B/C type NR indicators**

㉓ **MONITOR (TAPE/SOURCE) indicators**

㉔ **PEAK/VU left & right meters** – Indicate recording and playback levels of individual channel.

㉕ **MIC jacks** – A jack for directly recording from microphones. L and R jacks are operable independently to each other. Use of the LEFT/MONO jack permits recording in both L and R with one microphone.

㉖ **EQ CALIBRATION controls** – By adjusting these controls in recording, frequency characteristic in a high end of a tape used can be corrected for flat response.

㉗ **LEVEL CALIBRATION controls** – Serve to calibrate the Dolby level differences between SOURCE and TAPE. Such level differences can otherwise impair the operation of the NR system. (Refer to "MORC OPERATION".)

㉘ **BIAS CALIBRATION controls** – Serve to adjust the optimum bias amount for the tape use in recording. (Refer to "MORC OPERATION".)

㉙ **TEST OSC switch** – Serves to select the built-in oscillator circuits for BIAS, LEVEL and EQ calibrations. (Refer to "MORC OPERATION".)

㉚ **DOLBY NR select switch**

B: DOLBY B-type NR.
C: DOLBY C-type NR.
OFF: When not using DOLBY B-C type NR.

㉛ **TAPE SELECT switch**

㉜ **REC MUTE switch & indicator (⊙)** – Keept touching this switch to cut off a commercial message or to make an introductory blank. The indicator lights up. Unlike PAUSE switch, the tape runs unrecorded by touching this switch. Furthermore, if REC MUTE switch is touched after touching PAUSE switch during recording, the tape will automatically run for 3 seconds without recording (AUTO SPACE), then return to REC/PAUSE mode. During this time, REC MUTE indicator will flash on and off.

㉝ **PAUSE switch & indicator (▮▮)** – When this switch is touched during recording or playing back, the tape motion stops momentarily. When PLAY switch is touched, the tape resumes running. Pause function does not operate at fast forward and rewind modes.

㉞ **FF/CUE switch & indicator (▶▶)** – Touch this switch for fast forwarding the tape. Touch STOP switch to release FF mode. When FF/CUE switch is kept touched after touching PAUSE switch during playback, the tape will become in CUE mode. When the switch is released, it will return to PLAY mode. Furthermore, CUE operation can also be achieved by touching PLAY and FF/CUE switches simultaneously.

㉟ **PLAY switch & indicator (▶)** – Touch this switch, then the tape runs from the left to the right side.

㊱ **REW/REVIEW switch & indicator (◀◀)** – Touch this switch to rewind the tape rapidly. Touch STOP switch to release REW mode.

When REW/REVIEW switch is kept touched after touching PAUSE switch during playback, the tape will become in REVIEW mode. When the switch is released, it will return to PLAY mode. Furthermore, REVIEW operation can also be achieved by touching PLAY and REW/REVIEW switches simultaneously.

㊲ **REC switch & indicator (●)** – Touch this switch together with PLAY switch or PAUSE switch for recording.

㊳ **STOP switch (■)** – When this switch is touched during tape running, the operation modes stop.

㊴ **PHONES jack** – Connect stereo headphones to this jack for private listening and tape monitoring.

NAMES AND FUNCTIONS OF PARTS ON REAR PANEL (See Fig. 2)

㊵ **LINE OUT jacks to Amplifier**

㊶ **LINE IN jacks to Amplifier**

㊷ **REMOTE jack** – When ALPINE Model RU-20B is available in the market is connected to this jack, AL-85 can be remotely controlled without operating the front panel. Model RU-10 is usable also to AL-85.

㊸ **FREQUENCY selector switch** – Select a suitable frequency 50 Hz or 60 Hz. If the frequency is unsuitable, the time counter does not function correctly.

㊹ **Voltage selector switch (For Multi-voltage Model only)** – Select the suitable voltage 110, 127, 220 or 240 volts to be used. Turn the switch clockwise or counterclockwise by a screwdriver according to your AC voltage.

㊺ **AC supply cord**

CONNECTIONS (See Fig 6)

Using for LINE OUT jacks

Connect the plug cord between LINE OUT jacks of this unit and the "Tape Play" jacks or "Tape Monitor" jacks of your stereo amplifier.

Using for LINE IN jacks

Connect the plug cord between LINE IN jacks of this unit and the "Tape Out" jacks or "Tape Rec" jacks of your stereo amplifier.

Notes:

(1) Prior to wiring connections, be sure to unplug each AC supply cord.
(2) Firmly connect the pin plug cords each other.
(3) Confirm that each plug and jack is correctly connected right to right and left to left.

PLAYBACK (See Fig. 9)

- Confirm that all connections are correct. (See Fig. 6)
- Confirm that the voltage and FREQUENCY selector switches are set to suitable positions.
- Confirm that TIMER switch is set to OFF position.

1. Turn on the AL-85.
2. Load a desired cassette tape in the manner instructed before.
3. Push MONITOR switch out for TAPE position.
4. Push COUNTER switch for TAPE display.
5. Set TAPE SELECT switch according to the type of the tape. For suitable position, refer to table 1.
6. Set DOLBY NR select switch to B, C, OFF. If the tape is recorded with B-type, C-type NR system, set the switch to B, C position and if without NR system, set it to OFF position.
7. Touch PLAY (▶) switch.
8. Adjust OUTPUT LEVEL control for proper level.

   Note: Since the meter indicates the recorded level in a playback tape, OUTPUT LEVEL control gives no variation on the meter needles.

   - When you wish to locate the particular portion of the tape, use FF/CUE (▶▶) or the REW/REVIEW (◀◀) switch. Or, use MEMORY switches with AUTO PLAY and/or AUTO REW switch. (Refer to "COUNTER MEMORY SWITCH OPERATION")
9. To stop playing back, merely touch STOP switch. When the tape comes to an end, the mechanism automatically stops.
   - To stop the tape running temporarily, touch PAUSE switch.
   - To take out the cassette tape, push EJECT knob after touching STOP switch.
   - If you desire to play the program on the reverse side, reload the cassette tape with its opposite side facing toward you and touch PLAY (▶) switch again.

PRIOR TO RECORDING

Recording level setting (See Figs. 10 and 11)

A recording level has a great influence over the quality of reproducing sound. If a tape is recorded with PEAK/VU meters needle deflected over full scale, a reproducing sound may be distorted, while the S/N ratio may be degraded and the sound may be disturbed by a noise if the needle deflection is too small. Set PEAK/VU meters to PEAK or VU before setting the maximum recording level.

To set the recording level, first slide LINE and MIC level controls to the left. Slide MASTER REC LEVEL control to the "8" position. Then, slide LINE and MIC level controls gradually to the right while monitoring the meter deflection so that the maximum recording level and optimum sound volume balance of L and R are obtained. For generally advisable recording levels, refer to Fig. 10. Once this adjustment has been completed, thereafter the recording level can be adjusted only by operating MASTER REC LEVEL control.

Note: When not recording through MIC jacks, set MIC level controls to 0 position (Fully to the left).

PEAK/VU meter (See Fig. 12)

The PEAK/VU meter operates as graphically shown in illustration.

As shown in the graph, PEAK meter holds a signal at its maximum value for some duration.

PEAK meter is suitable for the recording level setting. VU meter indicates the mean level of sound. That is, a signal input is indicated as it is. The maximum momentary level is not correctly displayed, but almost the same in the sense of hearing. Therefore, it is convenient for balancing L and R levels, or checking volume effect.

Erasure of recording (See Fig. 13)

When a new recording is made, any program material previously recorded on that portion of the tape is automatically erased, and only the new recording remains. To erase recorded sound without making a new recording, operate the recorder in a normal manner for recording without any input connected to MIC jacks, and slide all REC LEVEL controls (MASTER, MIC, LINE) fully to the left side. This will erase all previous recordings and leave you with a blank tape for brand-news recordings.

MONITOR recording (See Fig. 14)

One of the advantages of the three head configuration of AL-85 is the capability to monitor a recording while its is being made, without interrupting the recording process. Monitoring assist the recording level setting, confirmation of Dolby NR effect/tape quality and comparison of recording source with just recording actual sound.

1. Push MONITOR switch out for TAPE position.
2. Set the tape monitor switch of your amplifier/receiver or plug a pair of headphones into PHONES jack.
3. Now, what you will listen to will be the actual recording.

Note: When recording from microphones, use headphones for monitoring. If you try to monitor through your amplifier/receiver, the acoustic squealing and howling may occur to ruin your recording.

Safeguard against accidental erasing (See Figs. 15 and 16)

Every time a recording is made, the sound previously recorded is erased. To safeguard valuable recordings from being erased accidentally, the cassette and the recorder are equipped with special devices. On the back of the cassette are two little tabs. If you want to be sure that a recording can never be erased again, break out these tabs with a screwdriver or similar tool. The resulting opening interlocks REC switch of the recorder. The REC switch cannot be operated while this cassette is inserted. In order to protect tapes with important recordings from accidental erasure, we suggest that you remove the protective tabs in the rear of the cassette.

If only one track is to be protected, break out only the tab at the left when the tape is in position for using that track. If you wish to record on a cassette whose tab has been removed, simply cover the slot with cellophane or vynil tapes, then record in the usual way.

4-digit multi-memory tape/time counter (See Fig. 17)

Tape counter . . . This counter is seven times as precise as a 3-digit counter at 000 at the beginning of the tape, it will end around 480 (C-60). ALPINE's 4-digit tape counter set at 0000 for the same C-60 tape, will end up at around 3200.

Time counter. . . By resetting the time counter to 00:00 at the start of your tape, you can get an accurate timing of actual tape played or recorded. The timer stops when the deck is put into either the fast forward, rewind, pause or stop mode.

It is easy to measure the time of recording, FM programs and other program sources and simple arithmetic gives you the time remaining on your tape recording or listening.

RECORDING (See Fig. 18)

Recording from stereo amplifier/receiver.

- Confirm that all connections are correct.
- Confirm that the voltage and FREQUENCY selector switches are set to suitable positions.
- Confirm that TIMER switch is set to OFF position.

1. Turn on the AL-85.
2. Load a blank cassette tape in the manner instructed before.
3. Touch COUNTER switch for TAPE display.
4. Touch CLEAR switch to set "0000".
5. Set TAPE SELECT switch according to the type of the tape. For suitable position, refer to table 1.
6. Adjust BIAS, LEVEL and EQ CALIBRATION controls for optimum points according to the tape to be used. (Refer to "MORC OPERATION".)
7. Set DOLBY NR select switch to B or C position for recording with DOLBY NR B-type or C-type system, to OFF position for recording without DOLBY NR system.
   When recording an FM stereo broadcast with NR system, push MPX FILTER switch in for ON, when recording a program source with NR system other than an FM stereo broadcast, push the switch out for OFF.
8. Push MONITOR switch in for SOURCE position.
9. Touch PAUSE (▮▮) and REC (●) switches simultaneously.
10. Adjust REC LEVEL controls (LINE, MASTER) for proper

recording level. Set MIC level controls to 0 position (Fully to the left).

11. Touch the PLAY switch (▶) to release the pause mode. Now, recording begins.
    - Push MONITOR switch alternately in or out to check the recording sound quality.
    - Adjust the monitor level with OUTPUT LEVEL control.
    - Touch PAUSE (▮▮) switch to stop the tape motion momentarily without using STOP switch. To start the tape motion again, touch PLAY (▶) switch.
    - Keep on touching REC MUTE (●) switch to make unrecorded blank on the tape. Otherwise, make blank with AUTO SPACE operation.
12. To stop recording, touch STOP switch. When the tape comes to an end, the mechanism automatically stops and releases REC and PLAY switches.

Note: To monitor the sound of source when the tape is in pause mode during recording, push MONITOR switch in for SOURCE position. If the switch is in TAPE position, no sound will be heard because the tape is not running.

Recording from microphones (See Fig. 14)

1. Connect a pair of microphones to the left and right MIC jacks properly.
2. Follow the steps 1 through 12 described in "Recording from stereo amplifier/receiver", but at step 10 set LINE level controls to the "0" (minimum) position and adjust MIC level and MASTER REC LEVEL controls to obtain proper recording level.

   Note: Use of the LEFT/MONO MIC jack permits recording in both L and R with one microphone.

Mixing Record

AL-85 is capable of Mixing Record between microphone input and line input per channel. This is performed in the same manner as described in "Recording from microphones" but only two different points in operation are to connect the desired program source to the LINE IN jacks on the rear panel and to adjust both MIC and LINE level controls to obtain proper recording level.

After adjustment for balance of microphone and line input levels, use the convenient MASTER REC LEVEL control.

Note: When mixing recording is not required, set a unnecessary input REC LEVEL (MIC or LINE) controls to the minimum position.

REC MUTE/AUTO SPACE FUNCTION (See Fig. 19)

A non-recorded gap on the tape can be created by touching and holding REC MUTE switch during recording. When the switch is released, the tape continues running in the recording mode. The automatic spacing function will be achieved for thee seconds when REC MUTE switch is momentarily touched after touching PAUSE switch during recording mode. After three seconds, the mode returns to the recording/pause mode. AUTO SPACE function is effective only after touching PAUSE switch during recording (REC/PLAY). If REC/MUTE switch is being continuously touched for three seconds over, the automatic spacing function is effective during only its touching duration.

Notes:

(A) While keeping REC MUTE switch touched, REC MUTE function is effective.

(B) When touching REC MUTE switch momentarily, AUTO SPACE function is effective for 3 seconds.

(C) When keeping REC MUTE switch continuously, AUTO SPACE function is effective three seconds over.

PRINCIPLE OF DOLBY C-TYPE NOISE REDUCTION SYSTEM (See Figs. 20 to 24)

Based on the operating principles which have been responsible for the success of the B-type NR system, the new C-type system provides 20 dB of NR above 1 kHz. C-type NR is a dual-path system, whereby NR is accomplished by means of a low-level side chain. In addition, the sliding band technology of B-type NR has been utilized in the new system, although the band over which NR occurs has been extended downward by about two octaves in the new system to ensure subjective uniformity of NR over the whole audible bandwidth (Fig. 20)

Dolby C-type NR solves the problem of achieving a large amount of compression and expansion without introducing undesirable side effects by the use of two processing stages in series, each supplying 10 dB of compression during recording and of expansion during playback. These circuits operate at independent levels. One, identified as the high-level stage in Fig. 21, is sensitive to signal at about the same levels as Dolby B-type NR, while the other, the low level stage, operates on signals of somewhat lower level. Because the two stages operate in tandem with each other, their effect is to multiply the signal (or add and subtract in dB's), so that a total of 20 dB of compression and expansion, and thus of NR, is accomplished. Yet simultaneously, at no time is the signal subject to the vagaries of a single compression or expansion action of 20 dB (Fig. 22). In other words, the tandem two-level two stage configuration provides a much more accurate control of the signal than a single compander circuit would be able to achieve.

With two circuits shown in Fig. 21 as anti-saturation and spectral skewing networks, the frequency response is improved in the high frequency wide range.

The AL-85 frequency response of metal tape in Dolby NR On/Off shows in Fig. 24.

FOR METAL TAPE

The material has been improved from the first iron oxide (gamma Fe_2O_3) to chromium dioxide (CrO_2). In spite of such improvement of the tape material, the performance of the tape itself made of the improved material has reached the limit and failed to fill a gap existing between a reproduced sound and an original sound. A metal tape made of a new material has been developed to satisfy the demand to improve the performance of a tape itself.

In the metal tape, a polyester base of the tape is coated with a magnetic material composed primarily of pure iron (Fe). Appearance and touch of the metal tape are almost the same as those of a conventional tape. However, since the metal tape can record twice or more times larger information content with high density, the maximum output level can be improved over all frequency bands. Particularly, the frequency response and dynamic range can be considerably improved. Therefore, if this new material is applied to a cassette tape, the high frequency response will be improved to the level comparable to that of a reel-to-reel tape deck of 4-track/19 cm.

TIMER OPERATION (See Fig. 25)

Timer Recording

1. Connect the AC supply cords as illustrated.
2. Turn the amplifier/receiver on and select the desired station to be recorded.
3. Follow the steps 1 through 10 described in "Recording from stereo amplifier/receiver".
4. Touch STOP switch to release the REC, PLAY and PAUSE switches.
5. Set the timer to the desired time. Then, the stereo amplifier/receiver and AL-85 will be turned off.
6. Set TIMER switch to REC position.

When the timer switches on at the present time, AL-85 will start recording.

Timer Playback

1. Connect the AC supply cords as illustrated.
2. Follow the steps 1 through 6 described in "PLAYBACK".
3. Set the timer to the desired time. Then, the stereo amplifier/receiver and AL-85 will be turned off.
4. Set TIMER switch to PLAY position.

When the timer switches on at the present time, AL-85 will start playback.

Note: Before using the timer, please read the operating instruction of the timer carefully.

Caution

- Be sure to set TIMER switch to the "OFF" position except for recording and playback with the timer.
- While TIMER switch is set to the "REC" or "PLAY" position, don't open or close the cassette door for several seconds after POWER switch has been turned on, for protection of the internal mechanism.
- If TIMER switch is left set to the "REC" or "PLAY" position, the tape drive mechanism will automatically start recording or playback.
  Therefore, it is noted that if the accidental erasing protection tab of a cassette tape is not broken, the recorded contents of the tape will be erased.

REVIEW & CUE OPERATION (See Figs. 26, 27)

- **Review . . .**
  Touching REW/REVIEW switch achieves normal rewind operation and touch STOP switch to release the rewind mode. The review mode is achieved by touching PAUSE switch and then keeping REW/REVIEW switch touched in the **play mode**. The review mode is also achieved by touching PLAY and REW/REVIEW switches simultaneously. When REW/REVIEW switch is released, the review mode returns to the play mode.

- **Cue . . .**
  Touching FF/CUE switch achieves normal fast forward operation and touch STOP switch to release the fast forward mode. The cue mode is achieved by touching PAUSE switch and then keeping FF/CUE switch touched in the **play mode**. The cue mode is also achieved by touching PLAY and FF/CUE switches simultaneously. When FF/CUE switch is released, the cue mode returns to the play mode.

COUNTER MEMORY SWITCH OPERATION (See Table 2)

Various manner of operation is available. To draw out the full performance of AL-85, commence counter memory operation according to following procedures. For tape motion, refer to table 2.

1. Touch TAPE/TIME switch for TAPE display.
2. Touch CLEAR switch to set a desired start position "0000".
3. Touch MEMORY WRITE switch at a desired program position. When this switch is touched at other position, previously memorized figure is automatically cleared.
4. Touch MEMORY EXECUTION switch to proceed counter memory operation.
5. To clear figures which were memorized with MEMORY WRITE switch, touch CLEAR switch while holding MEMORY CALL switch touched.

Notes: (1) When MEMORY EXECUTION switch is not touched, the counter memory function does not operate and the fast forward, rewind and play modes are preferential.
(2) The inertia of tape reel may cause slight over-running of the counter figure.

Examples (Memory position "0200")

1. When you want to automatically stop tape running at the desired position on the tape . . . .
   (1) Touch MEMORY WRITE switch at the "0200" position on the tape. Touch MEMORY EXECUTION switch to ON.
   (2) Touch REW/REVIEW (◀◀) or FF/CUE (▶▶) switch and the tape motion automatically stops at the desired position on the tape where TAPE counter indicates "0000" or "0200".
2. When you want to automatically repeat playback of the desired section . . . .
   (1) Touch MEMORY CLEAR switch at the start position of the desired section to set the tape counter to "0000".
   (2) Touch MEMORY WRITE switch at the end "0200" of the desired section to memorize it.
   (3) Touch MEMORY EXECUTION switch and push AUTO PLAY and AUTO REW switches to lock it beforehand.
   (4) Touch REW/REVIEW (◀◀) switch to locate the start position. Then, the program in the section between "0000" and "0200" positions repeats to play back.

Notes: (1) The reference digits shown in the table 2 are ones which memorized by touching MEMORY WRITE switch at the "0200" position.
(2) Mark "○–" in the table 2 is tape start position on the tape where one of FF/CUE, PLAY and REW/REVIEW switches is just touched. Mark " ■ " is tape running stop position. Mark " **X** " is a mode change point.

MORC OPERATION (See Figs. 28 to 31)

• MORC (Manual Optimum Recording Calibration)

The most striking difference is in the method adopted for accurate calibration of bias, Dolby level and equalization in accordance with the exact properties of the cassette inserted.

The AL-85 is equipped with all facilities for performing these adjustments manually, as all professional recording engineers do it with their studio consoles.

For the first time in the world, Alpine's AL-85 deck incorporates all facilities for accurate, professional adjustments of bias, Dolby level and equalization in one unit. A built-in test oscillator, when activated, generates signals of 800 Hz and 12.5 kHz frequency. By recording and, via the AL-85's 3-head system, simultaneously playing these signals while adjusting the bias current, level and equalization controls, the optimum point that renders linear frequency response at minimized distortion can be found.

Compared with decks that permit adjustments of either only bias or only equalization, the 3-way adjustability of the AL-85 offers a pair of major advantages. For one, if only bias and level are adjustable, but equalization is fixed, it is not always possible to obtain optimum values simultaneously for all three parameters, in other words minimum distortion. The AL-85, on the other hand, permits true optimization in all three regards and thus delivers the smallest possible distortion with any tape.

Secondly, bias can be adjusted over a much wider range, because equalization is also adjustable. The wider permissible bias range lets the AL-85 accommodate a much greater variety of tapes with optimized results.

Conversely, professional recording engineers often deliberately underbias or over-bias tapes in order to accommodate (or compensate for) certain peculiarities in the program material. Overbiasing achieves a further reduction in harmonic distortion (albeit at a trade-off in high frequency response). Underbiasing can be used to achieve extra headroom in the high range (at a small increase in distortion).

The home recordist with professional ambitions will fine the Alpine AL-85 a most valuable tool.

• Operation (Refer to Fig. 31 and MORC Operating Flow Chart.)

1. Push POWER switch to ON and insert a cassette tape.
   * MEMORY EXECUTION switch in OFF (INDICATOR in OFF).
   * MPX FILTER and PEAK/VU meter switches in any position.
   * DOLBY NR switch will be set to OFF automatically regardless of its setting position.
2. Place MONITOR switch in the TAPE, released out position.
3. Place TAPE SELECT switch in any position according to a type of tape to be used. (Refer to table 1)
4. Set BIAS, LEVEL and EQ CALIBRATION controls to "0" position.
5. Touch REC (●) and PLAY (▶) switches simultaneously to set the unit into record mode.
6. Set TEST OSC switch to BIAS/LEVEL position.
7. Adjust BIAS CALIBRATION (L/R) controls to obtain maximum meter deflection on each left and right channel meter.
8. Adjust LEVEL CALIBRATION (L/R) controls so that each left and right channel meter indicates a same value for both TAPE and SOURCE positions. (If the same value is not obtained, refer to (A).)
9. Set TEST OSC switch to EQ position.
10. Adjust EQ CALIBRATION (L/R) controls so that each left and right channel meter indicates a same value for both TAPE and SOURCE positions. (If the same value is not obtained, refer to (B).)
11. Set TEST OSC switch to BIAS /LEVEL position again, and make sure the same output level is obtained for both TAPE and SOURCE positions. (If not, repeat steps 8 through 11.)
12. Set TEST OSC switch to OFF position.
13. Push STOP switch.

(A) 1. TAPE SELECT switch is positioned in a wrong tape position.
2. Improper BIAS adjustment.

Note: Check items 1 and 2 above. If the same levels are still not obtained, the tape will be suspected. Replace the tape with new one and try to make the adjustment.

(B) 1. Make sure TAPE SELECT switch is in a correct tape position.
2. (a) Set TEST OSC switch to EQ position, and adjust BIAS CALIBRATION controls to obtain the same levels for both TAPE and SOURCE positions. (If the same levels are still not obtained, proceed to next step 3 shown below.)
   (b) Set TEST OSC switch to BIAS/LEVEL position, and proceed to step 8 in "OPERATION".
3. (For the unit adjusted repeatedly two or more times with steps 1 and 2 of (B)).
   (a) Set TEST OSC switch to EQ position and then turn the EQ controls by one step towards "0" position from its present position (+ or –).
   (b) Adjust BIAS CALIBRATION controls so that no level difference is observed between TAPE and SOURCE. Next, set TEST OSC switch to BIAS/LEVEL position and proceed to step 8.

Note: If same levels are still not obtained, the tape will be suspected. Replace the tape with new one and try to make the adjustment.

• Caution for MORC operation

1. BIAS, LEVEL and EQ CALIBRATION controls are active only during recording. Turning these controls during playback has no effect on sound quality.
2. When the same brand of tape is used continuously, repeated BIAS, LEVEL and EQ calibrations are not necessary. However, if a different brand of tape for the same tape position or a tape for another tape position is used, BIAS, LEVEL and EQ calibrations must be performed again.

TROUBLESHOOTING HINTS

When the tape deck fails to function properly, check following conditions first, then examine it according to the check list below. If the abnormality does not fall under any items in the check list, the tape deck itself may have developed certain trouble. Contact the nearest ALPINE dealer in this instance.

1. Are all connections correct ?
2. Is this unit properly used as instructed in the manual?
3. Is there any trouble on speakers and amplifiers ?

Symptom	Causes	Remedy
● Tape does not run.	● No power supplied. ● Cassette door is not properly closed. ● PAUSE switch was touched and the deck is in pause mode. ● Tape end is reached.	● Check AC supply cord and POWER switch. ● Push EJECT knob to check cassette loading and close the cassette door again. ● Release the pause mode. ● Rewind the tape or turn the cassette over.
● During rewind, the tape stops or goes into playback.	● MEMORY EXECUTION switch is ON.	● Set MEMORY EXECUTION switch to OFF.
● Recording is not possible.	● Tabs for prevention of accidental erasure have been removed. ● Connections are improper. ● Heads are dirty.	● Cover the tab openings with a piece of adhesive tape. ● Check connections. ● Perform head cleaning.
● No playback sound.	● During playback, MONITOR switch is set to SOURCE. ● OUTPUT LEVEL control is set to minimum. ● During recording and pause mode, MONITOR switch is set to TAPE.	● Set MONITOR switch to TAPE. ● Adjust for proper level. ● Set MONITOR switch to SOURCE.
● Recording or playback operation starts automatically when power is switched on.	● TIMER switch is not set to OFF.	● Set TIMER switch to OFF.
● Input signal does not come in the deck when recording.	● REC LEVEL controls are set to minimum. ● Connections between AL-85 and stereo system are incorrect.	● Adjust for proper level. ● Check connections and cords.
● Playback sound is husky or left/right sound balance is instable.	● Heads are dirty. ● Tape is stretched or warped.	● Perform head cleaning. ● Use another tape.
● Excessive tape hiss.	● Heads are magnetized. ● Inferior tape with high hiss noise is used. ● Heads are dirty. ● Setting of DOLBY NR select switch is unsuitable. ● Recording level is too low. ● MIC level controls are not set to minimum in recording from LINE IN.	● Perform head demagnetizing. ● Replace the tape. ● Perform head cleaning. ● Set the switch to a correct position. ● Adjust for proper level. ● Set MIC level controls to minimum.
● Sound is distorted	● Recorded sound on the tape itself is distorted. ● Recording level is too high. ● TAPE SELECT switch is not set to correct position in recording.	● Check by listening to another tape. ● Adjust for proper level. ● Set TAPE SELECT switch to correct position.
● Wow/flutter is excessive and sound is intermittent.	● Heads, pinch rollers and capstans are dirty. ● Tape is wound too tightly or unevenly.	● Perform cleaning of heads and tape transport part. ● Wind the tape with fast forward or rewind.
● Loud hum noise is heard during playback.	● Connection cords are not plugged in correctly. ● External leakage flux (in inductive fields from amplifier power transformer, etc.) occurs. ● Heads are dirty.	● Securely plug in all cords. ● Remove inductive sources such as fluorescent lamps, amplifiers, transformers, etc. from the vicinity of the deck. ● Perform head cleaning.
● High tone is excessively enhaned.	● DOLBY NR system is not engaged properly. ● TAPE SELECT switch is set incorrectly.	● DOLBY NR system as was used in recording must be employed for playback. ● Set TAPE SELECT switch to suitable position.
● High tone is weak.	● Heads are dirty. ● TAPE SELECT switch is set incorrectly. ● Dolby NR system is engaged for playback of a tape which was not recorded with Dolby NR system.	● Perform head cleaning. ● Set TAPE SELECT switch to suitable position. ● Set DOLBY NR select switch to OFF.
● Only timer playback is effective even if the deck is set up for timer recording.	● Tabs for prevention of accidental erasure have been removed.	● Cover the tab openings with a piece of adhesive tape.

Symptom	Causes	Remedy
● Calibration adjustment is impossible.	● TAPE SELECT switch is set to incorrect position. ● Extremely worn-out tape is used. ● Heads are dirty.	● Set TAPE SELECT switch to suitable position. ● Use the another cassette tape. ● Perform head cleaning.
● Counter memory operation can not be performed.	● MEMORY EXECUTION switch is set to OFF.	● Set MEMORY EXECUTION switch to ON.
● TIMER counter does not give correct readings.	● Setting of FREQUENCY select switch is wrong.	● Turn off POWER switch and then set FREQUENCY select switch to the correct position.

MAINTENANCE

Lubrication

This should be performed by a qualified technician equipped with the proper tools. Please contact your nearest ALPINE dealer for lubrication of the deck.

Cleaning (See Figs. 32, 33)

When cleaning the tape head, slide up the cassette door to remove it. If a loss of brilliance in frequency response is noticed, the tape head probably requires cleaning. Wipe the surface of head, capstan, pinch roller, etc., using a cotton swab moistened with isoprophyl alcohol or special cleaning fluid. Perform cleaning about every ten hours of use or if possible, before every use.

Notes:

(1) Do not apply too much force during cleaning.
(2) Be careful not to damage the tape guides and the tape pad lifter.
(3) When using cotton-tipped sticks for cleaning, make sure not to leave any cotton strands on the cleaned parts.

To clean the cabinet

Wipe the cabinet with a soft cloth. Avoid using chemical fluids such as benzine and thinner because it may result in damage to the finish.

SPECIFICATIONS

Recording System. . . . . 4 track, 2 channel stereo
Tape Speed . . . . . 4.76 cm/sec. (1-7/8 ips)
Wow and Flutter . . . . . 0.022% (JIS WRMS)
Signal to Noise Ratio (A Curve WTD)
  Dolby NR Off. . . . . 60 dB
  Dolby B-Type NR On . . . . . 67 dB
  Dolby C-Type NR On . . . . . 73 dB
Distortion . . . . . 0.7% (1 kHz, 16mM)
Frequency Response by Reference Tape (Rec/Play, −20 dB NR OFF)
  Metal (TDK MA) . . . . . 20 Hz to 23 kHz
  20 Hz to 21 kHz (±2 dB)
  CrO_2 (TDK SA). . . . . 20 Hz to 21 kHz
  20 Hz to 20 kHz (±3 dB)
  FeCr (SONY-FeCr) . . . . . 20 Hz to 22 kHz
  20 Hz to 20 kHz (±3 dB)
  Normal (TDK AD) . . . . . 20 Hz to 21 kHz
  20 Hz to 20 kHz (±3 dB)
Bias Frequency . . . . . 105 kHz
Erase Ratio . . . . . 60 dB (100 Hz)
Crosstalk . . . . . 60 dB (1 kHz, 0 dB)
Input/Level Impedance. . . . . .
  Mic: 0.6mV/600 ohm
  Line: 75mV/15K ohm
Output Level/Impedance. . . . . .
  Line: 1V/10K ohm
  Headphones: 2mW/8 ohm
Fast Forward/Rewind Time . . . . . 80 sec (C-60)
Power Consumption 40W
Power Source . . . . . (For single voltage model) 120V, 60 Hz
  (For multi-voltage model) 110/127/220/240V, 50/60 Hz
Dimensions . . . . . 435(W) x 126(H) x 347(D) mm
Weight . . . . . 9.5 kg

* Specifications and characteristics are subject to change without prior notice.

MORC Operating Flow Chart

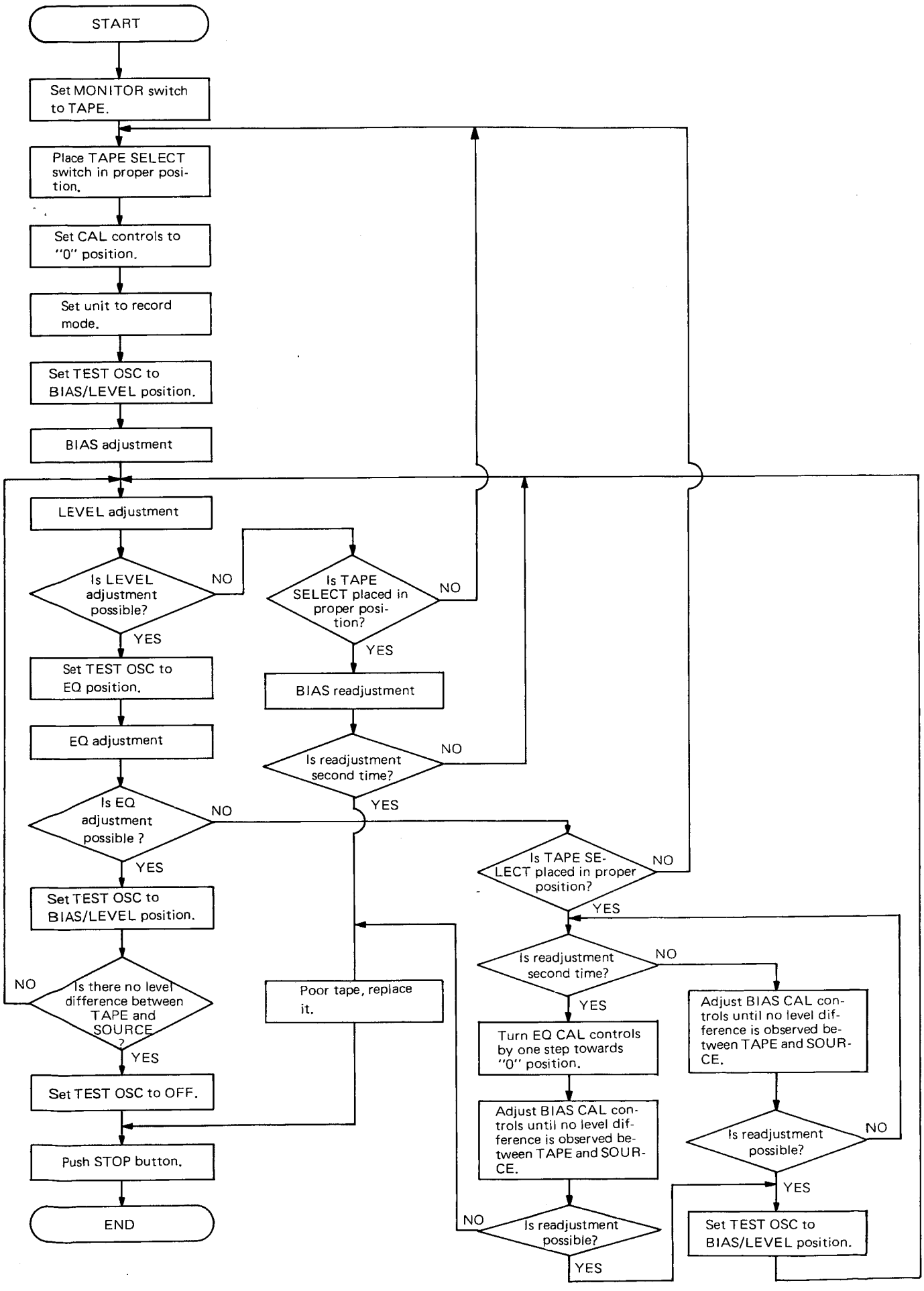
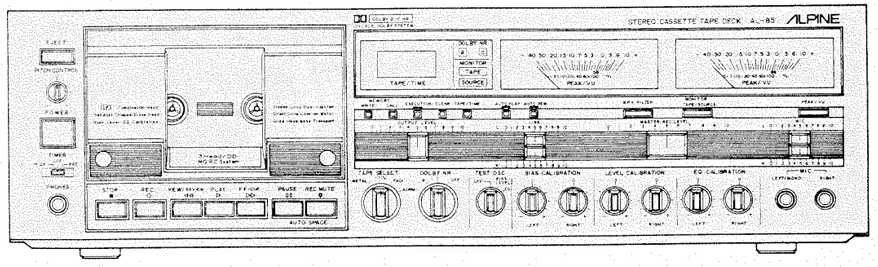


ILLUSTRATION MANUAL

- MANUEL D'ILLUSTRATION (FRANCAIS)
- BEDIENUNGSILLUSTRATION (DEUTSCH)
- MANUALE ILLUSTRATIVO (ITALIANO)
- MANUAL DE ILUSTRACIONES (ESPAÑOL)

STEREO CASSETTE TAPE DECK AL-85



ALPINE

ALPINE ELECTRONICS INC.
Tokyo Office: 1-7 Yukigaya Otsuka-cho
Ota-ku Tokyo, Japan
Phone 03-727-5311 Telex 246-6076

Iwaki Office: Oyasaku Yoshima-cho
Iwaki-shi Fukushima, Japan
Phone 0246-36-4111 Telex 8927-61

ALPINE ELECTRONICS GmbH
Münsterstr. 330 D-4000 Düsseldorf
F.R. Germany
Tel. 0211-626806 Telex 8588 296 ALPI D

ALPINE ELECTRONICS OF CANADA INC.
3475 14th Avenue, Markham
Ontario
Canada Phone 416-475-7280 Telex 06986789

ALPINE ELECTRONICS OF AMERICA INC.
LATIN AMERICAN DIVISION
19145 Gramercy Place
Torrance, California 90504
Phone 213-326-8000

68P55888F47-O

Printed in Japan

- FRONT PANEL • FACE AVANT • VORDERANSICHT
- VEDUTA FRONTALE • VISTA DELANTERA

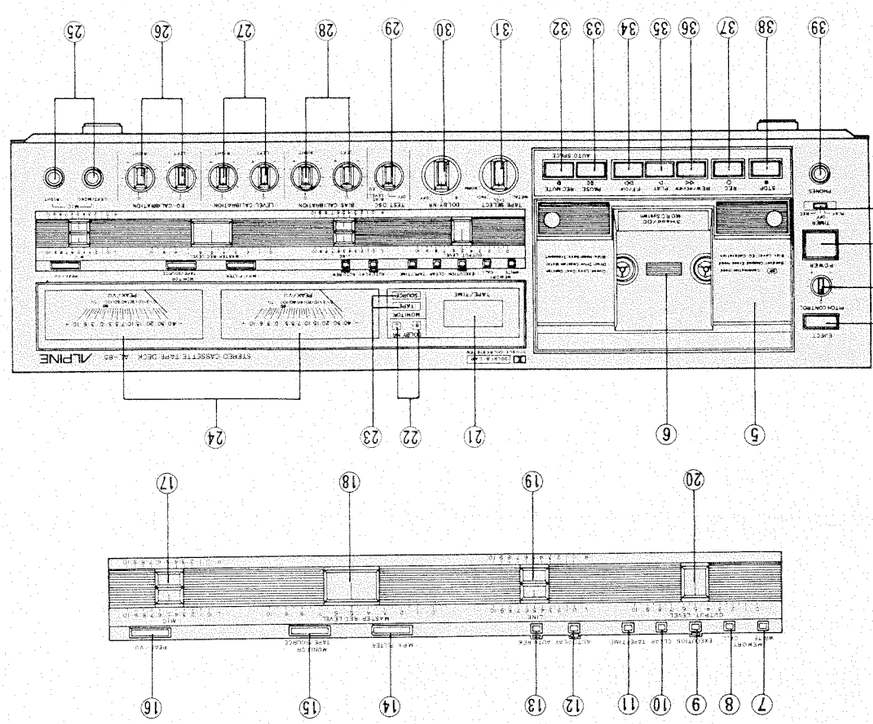


Fig. 1/Abb.1

- REAR PANEL • FACE ARRIERE • RÜCKANSICHT
- VEDUTA POSTERIORE • VISTA TRASERA

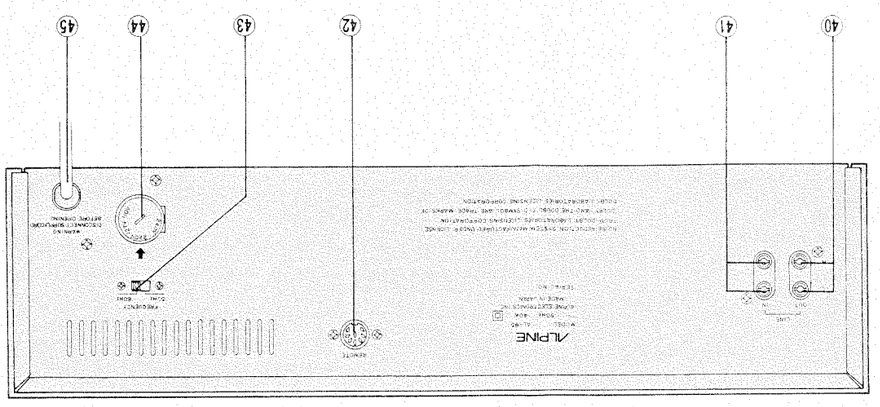


Fig.2/Abb.2

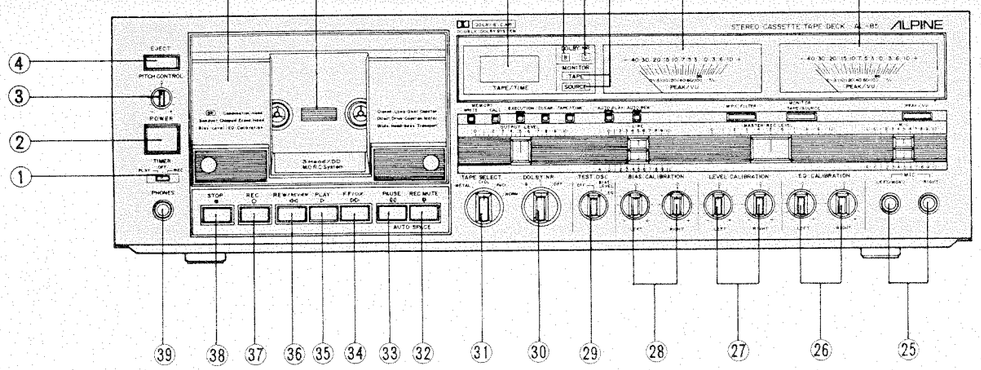


Fig.1/Abb.1

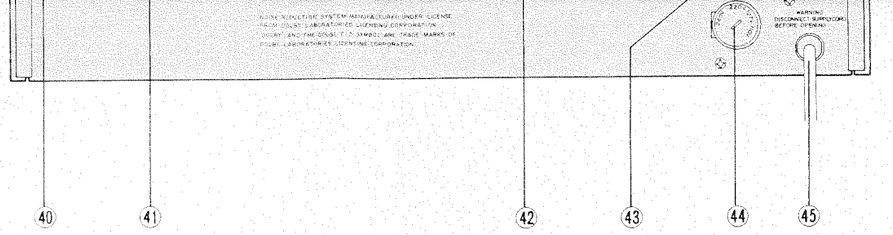


Fig.2/Abb.2

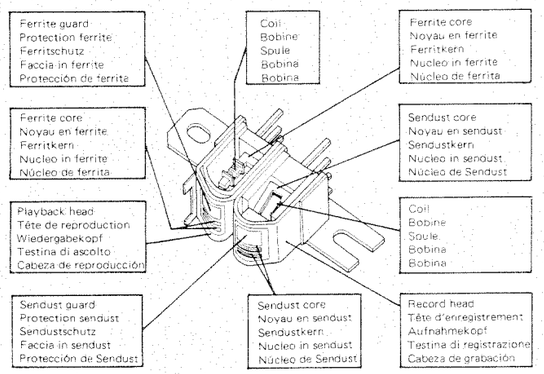


Fig.3/Abb.3

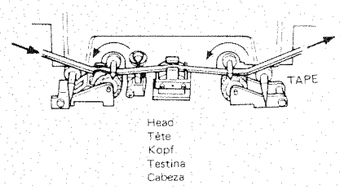


Fig.4/Abb.4

Fig.5/Abb.5

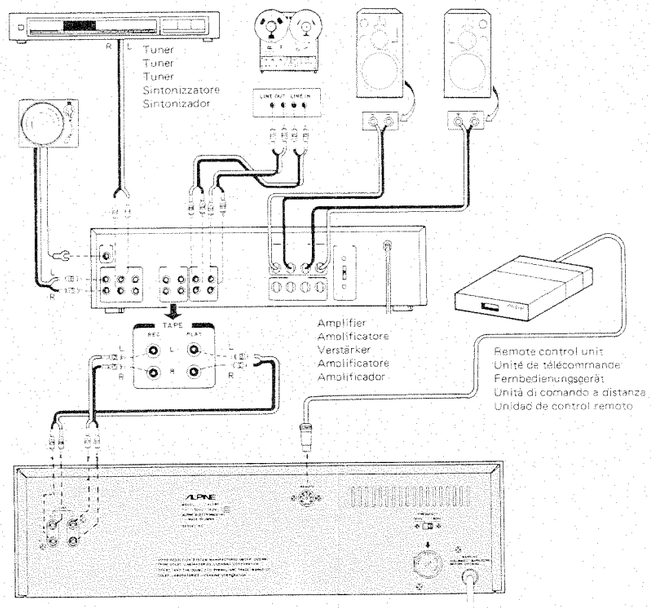


Fig.6/Abb.6

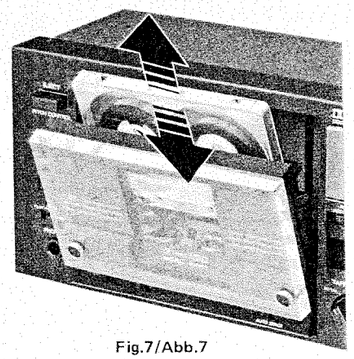


Fig.7/Abb.7

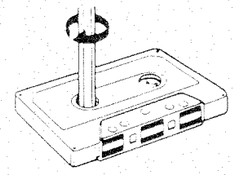


Fig.8/Abb.8

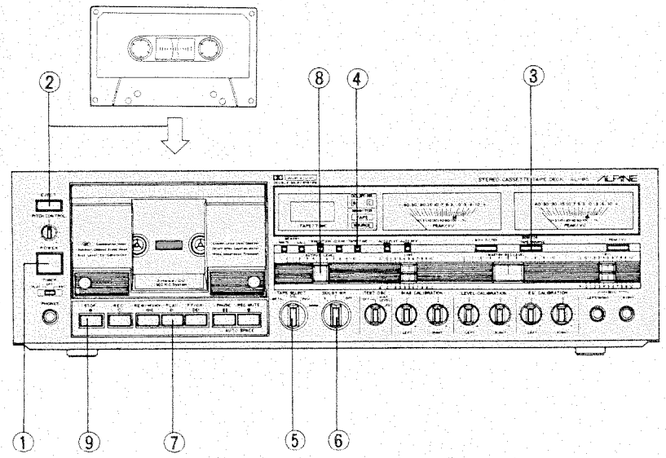


Fig.9/Abb.9

VU	PEAK
Metal +1 dB +4 dB	Metal +8 dB
CrO_2 0 dB +3 dB	CrO_2 +6 dB
FeCr −2 dB +1 dB	FeCr +6 dB

Fig.10/Abb.10

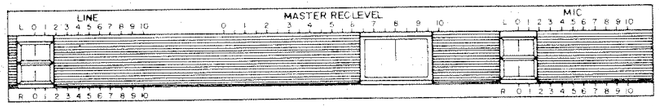


Fig.11/Abb.11

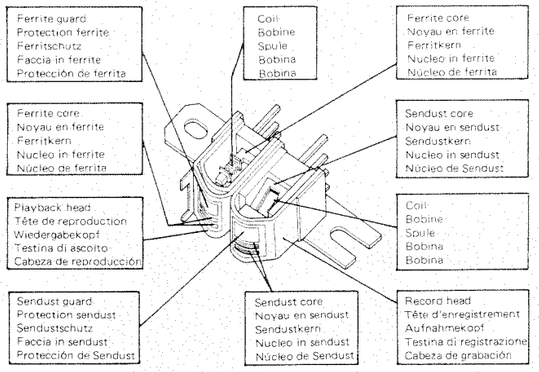


Fig.3/Abb.3

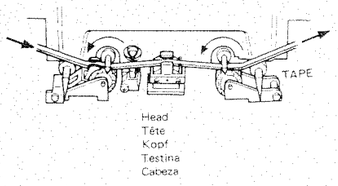


Fig.4/Abb.4

Fig.5/Abb.5

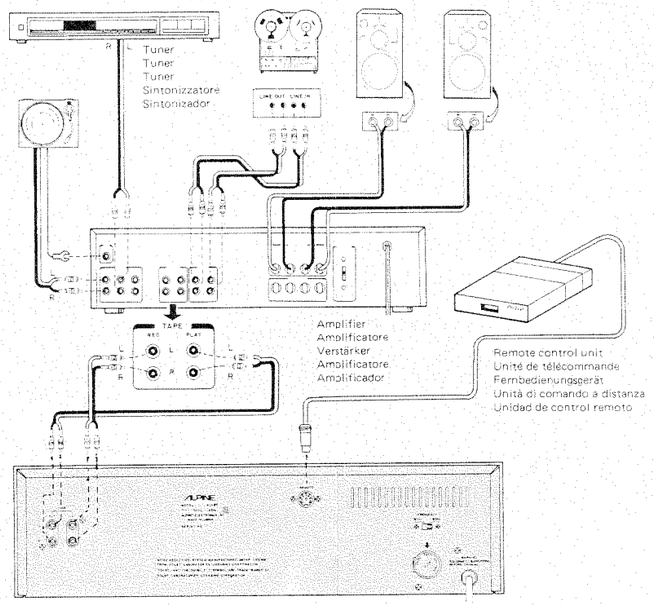


Fig.6/Abb.6

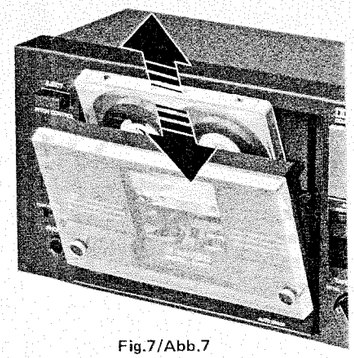


Fig.7/Abb.7

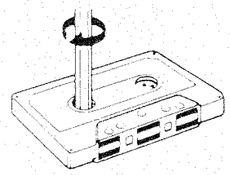


Fig.8/Abb.8

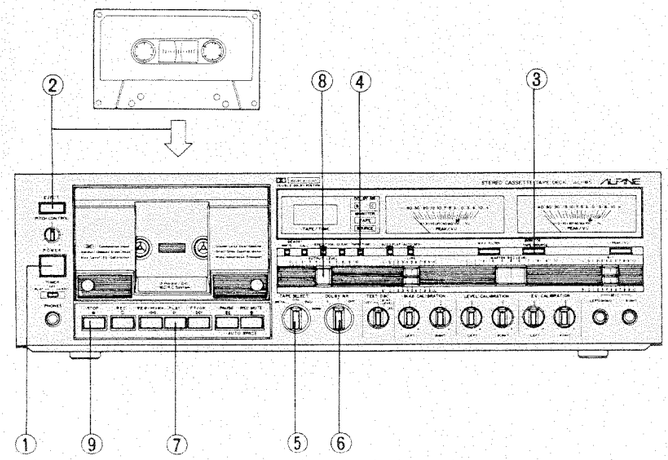


Fig.9/Abb.9

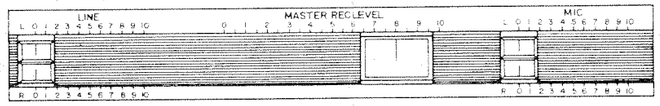


Fig.11/Abb.11

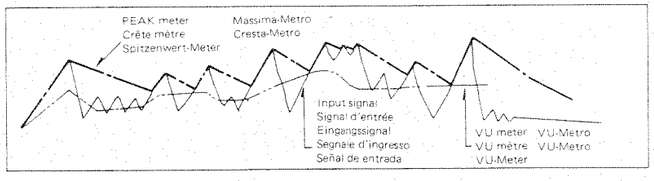


Fig.12/Abb.12

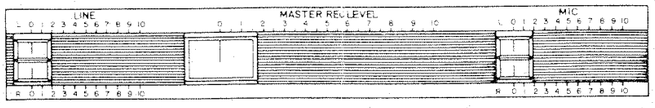


Fig.13/Abb.13

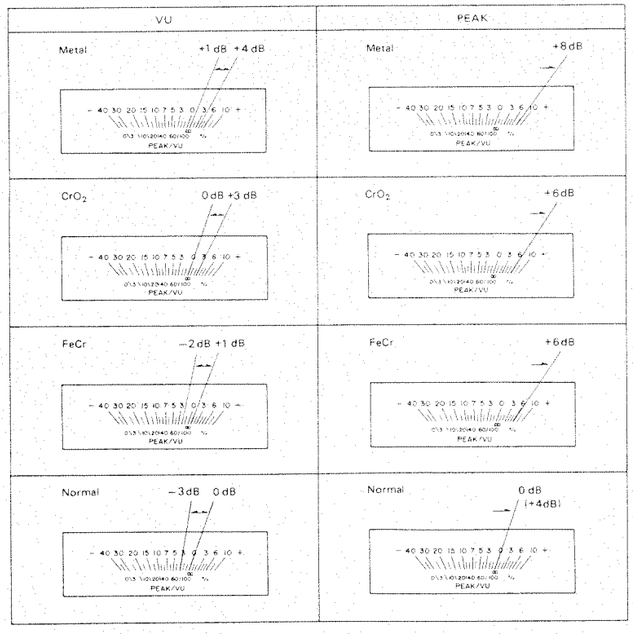


Fig.10/Abb.10

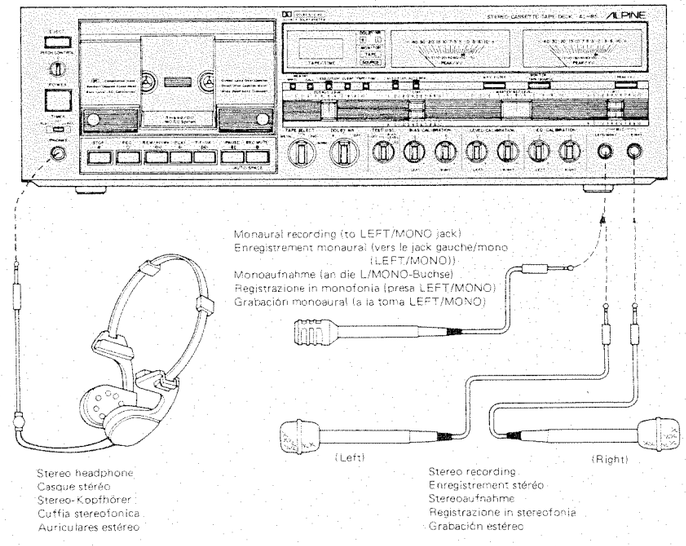


Fig.14/Abb.14

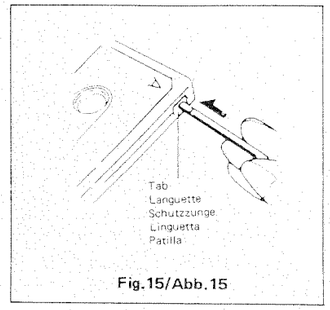


Fig.15/Abb.15

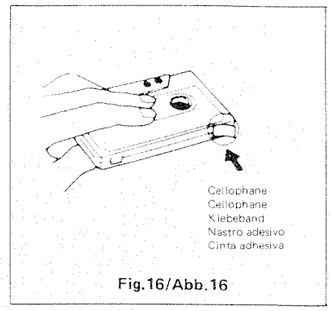


Fig.16/Abb.16

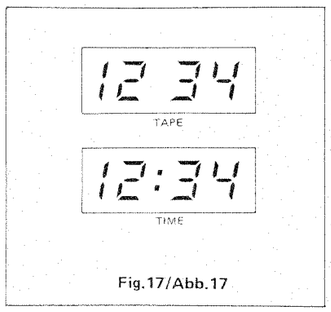
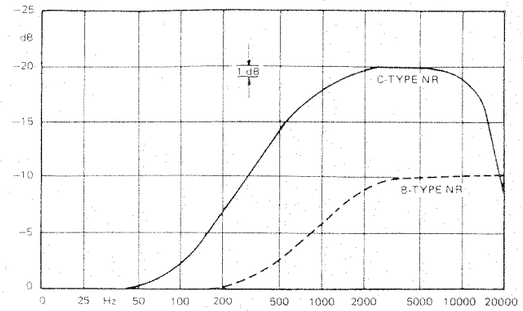


Fig.17/Abb.17

	Tape Motion	NOTE
① ① ②	REC/PLAY → REC MUTE → REC/PLAY	(A)
① ① ② ③	REC/PLAY → PAUSE → AUTO SPACE → (REC/PAUSE)	(B) (C)

Fig.19/Abb.19



Low-level encoding frequency response
Réponse de fréquence d'encodage à bas niveau
Frequenzgang bei niedrigem Aufsprechpegel
Risposta in frequenza "encoding" sul livello-basso
Respuesta de frecuencia de encodificación de bajo nivel

Fig.20/Abb.20

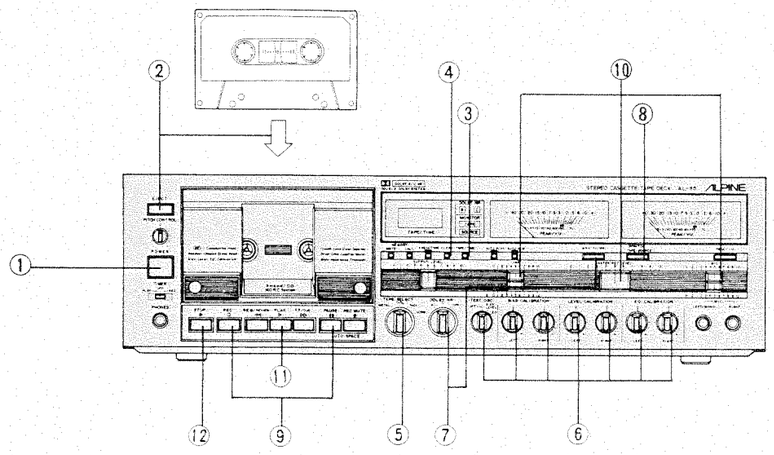
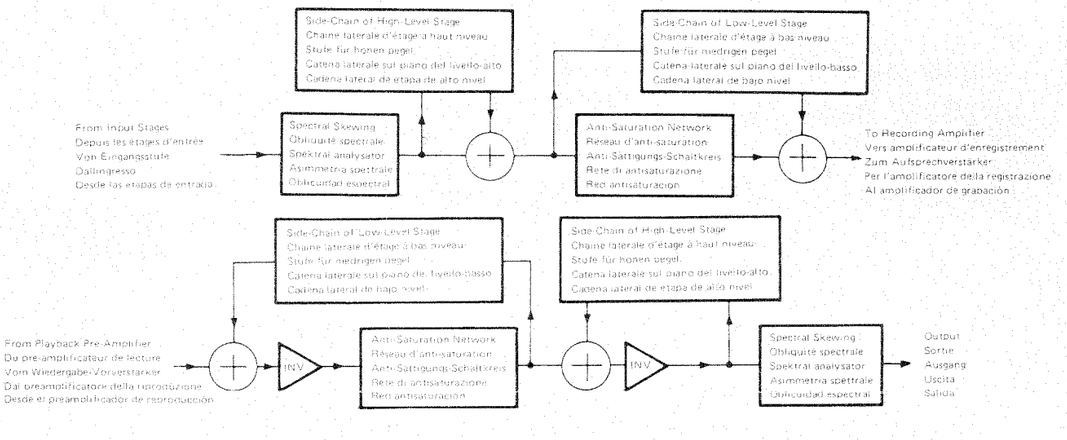
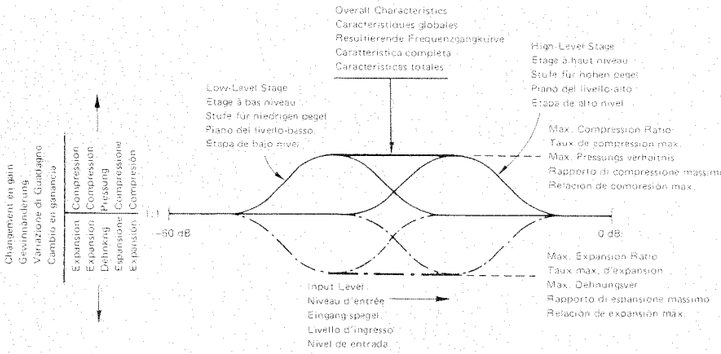


Fig.18/Abb.18



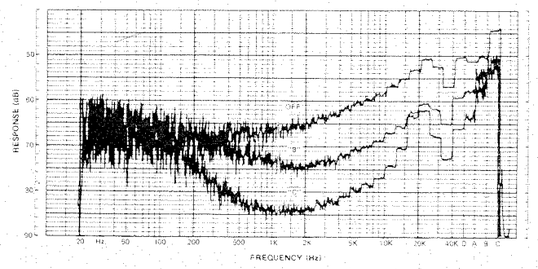
Dolby C-type NR block diagram
Schéma de principe du système Dolby type C
Blockschaltbild des Dolby-C-Schaltkreises
Schema a blocchi del Dolby NR
Diagrama de conjunto del sistema de reducción de ruido Dolby del tipo C

Fig.21/Abb.21



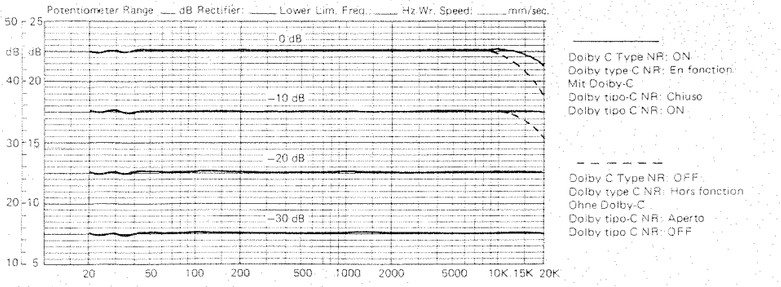
Two-level, two stages configuration
Configuration à deux étages, deux niveaux
Zweistufige Konfiguration mit zwei Pegeln
Configurazione di due-livelli, due-paini
Configuración de dos etapas, dos niveles

Fig.22/Abb.22



Noise level (Metal tape)
Niveau de bruit (Band au Métal)
Rauschpegel (Metallband)
Livello disturbo (Nastro Metallo)
Nivel de ruido (Cinta Metálica)

Fig.23/Abb.23



Dolby C Type NR: ON
Dolby type C NR: En fonction
Mit Dolby-C
Dolby tipo-C NR: Chiuso
Dolby tipo C NR: ON

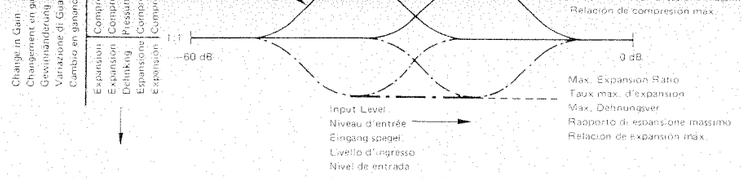
Dolby C Type NR: OFF
Dolby type C NR: Hors fonction
Ohne Dolby-C
Dolby tipo-C NR: Aperto
Dolby tipo C NR: OFF

Frequency Response of Dolby C-type NR
Réponse de fréquence du système Dolby type C NR
Frequenzgangkurve für Dolby-C
Risposta frequenza del Dolby tipo-C NR
Respuesta de frecuencia Dolby tipo C NR

Fig.24/Abb.24

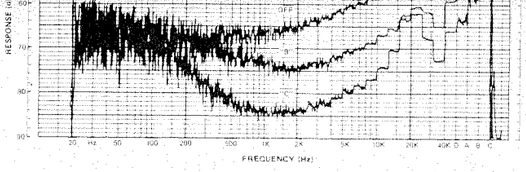
	Tape Motion
② ①	REW → STOP
③ ② ①	PLAY → REW → STOP
② ① ③	PLAY → REW → PLAY
③ ① ②	PLAY → PAUSE → REVIEW → PLAY
① ①	REVIEW → PLAY

Three-Dimensional Graph
Graphe tridimensionnel
Dreidimensionales Diagramm
Grafico tridimensionale
Gráfico tridimensional



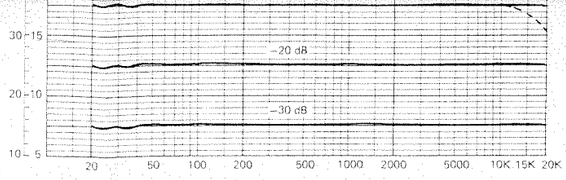
Two-level, two stages configuration
Configuration à deux étages, deux niveaux
Zweistufige Konfiguration mit zwei Pegeln
Configurazione di due-livelli, due-pairi
Configuración de dos etapas, dos niveles

Fig.22/Abb.22



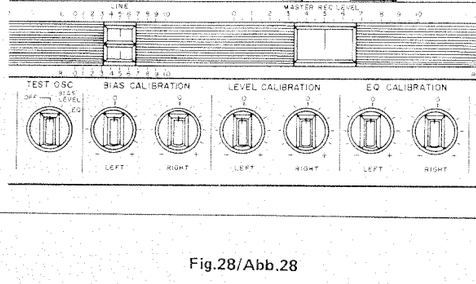
Noise level (Metal tape)
Niveau de bruit (Band au Métal)
Rauschpegel (Metallband)
Livello disturbo (Nastro Metallo)
Nivel de ruido (Cinta Metálica)

Fig.23/Abb.23



Frequency Response of Dolby C-type NR
Réponse de fréquence du système Dolby type C NR
Frequenzgangkurve für Dolby-C
Risposta frequenza del Dolby tipo-C NR
Respuesta de frecuencia Dolby tipo C NR

Fig.24/Abb.24



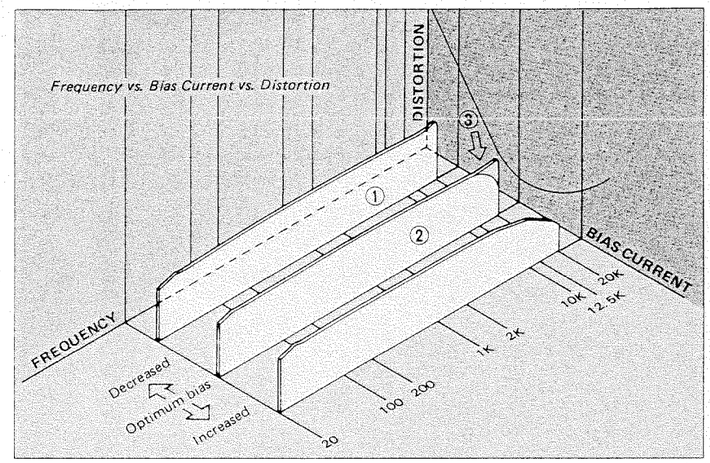
AL-85

Fig.25/Abb.25

	Tape Motion
② ①	REW→STOP
③ ② ①	PLAY→REW→STOP
② ① ③	PLAY→REW→PLAY
③ ① ②	PLAY→PAUSE→REVIEW→PLAY
① ①	REVIEW→PLAY

Fig.26/Abb.26

Three-Dimensional Graph
Graphe tridimensionnel
Dreidimensionales Diagramm
Grafico tridimensionale
Gráfico tridimensional



① With constant equalization, bias is reduced, proper frequency response obtained but distortion increases.
Avec une égalisation constante, la polarisation est réduite, la réponse en fréquence correcte est obtenue, mais la distorsion augmente.
Bei konstanter Entzerrung wird die Vormagnetisierung vermindert, der korrekte Frequenzgang wird erzielt, Verzerrungen werden jedoch erhöht.
Con un costante livellamento, bias viene ridotto, si ottiene una giusta risposta di frequenza ma la distorsione aumenta.
Con ecualización constante, la polarización es reducida, se obtiene apropiada respuesta de frecuencia pero la distorsión aumenta.

② Before equalization compensation (bias set for minimum distortion).
Avant la compensation d'égalisation (polarisation réglée pour une distorsion minimum).
Vor dem Entzerrungsausgleich (die Vormagnetisierung ist auf minimalste Verzerrungen eingestellt).
Prima della compensazione di livellamento (bias inserito al minimo di distorsione).
Antes de la compensación de ecualización (Polarización ajustada para mínima distorsión).

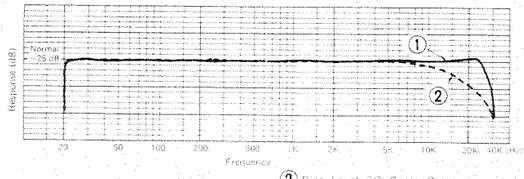
③ Bias optimized, equalization compensated to obtain linear frequency response.
Polarisation optimisée, égalisation compensée pour obtenir une réponse en fréquence linéaire.
Optimale Vormagnetisierung, kompensierte Entzerrung für den Erhalt eines linearen Frequenzgangs.
Bias ottimale, livellamento compensato per ottenere una risposta di frequenza lineare.
Polarización optimizada, ecualización compensada para obtener una respuesta de frecuencia lineal.

Fig.30/Abb.30

	Tape Motion
② ①	FF→STOP
③ ① ②	PLAY→FF→STOP
① ② ③	PLAY→FF→PLAY
① ③ ②	PLAY→PAUSE→CUE→PLAY
① ①	CUE→PLAY

Fig.27/Abb.27

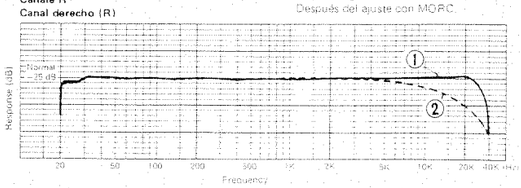
L Channel
Canal gauche (L)
L Kanal
Canale L
Canal Izquierdo (L)



① After the adjustment with MORC.
Après réglage avec MORC.
Nach der Einstellung mit MORC.
Dopo il regolamento con MORC.
Después del ajuste con MORC.

② Bias, Level, EQ. Center Point
Point central de polarisation, niveau, égalisation
Vormagnetisierung, Pegel, Entzerrungsmittelpunkt
Bias, livello, EQ. punto centrale
Polarización, nivel, punto central de ecualización

R Channel
Canal droit (R)
R Kanal
Canale R
Canal derecho (R)

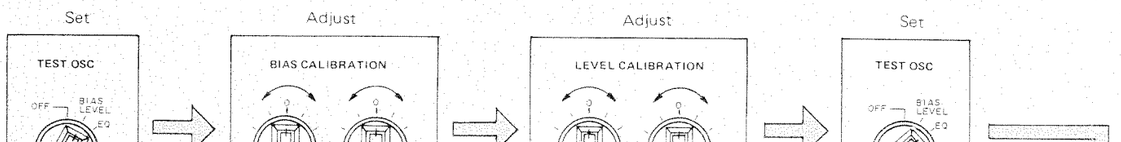


① After the adjustment with MORC.
Après réglage avec MORC.
Nach der Einstellung mit MORC.
Dopo il regolamento con MORC.
Después del ajuste con MORC.

② Bias, Level, EQ. Center Point
Point central de polarisation, niveau, égalisation
Vormagnetisierung, Pegel, Entzerrungsmittelpunkt
Bias, livello, EQ. punto centrale
Polarización, nivel, punto central de ecualización

Fig.29/Abb.29

Fig.28/Abb.28



Cronometrista
Dispositivo de tiempo

AL-85

Fig.25/Abb.25

								Tape Motion
②				①				FF → STOP
③			①	②				PLAY → FF → STOP
			①	②				PLAY → FF → PLAY
			③					
			①	③	②			PLAY → PAUSE → CUE → PLAY
			①	①				CUE → PLAY

Fig.27/Abb.27

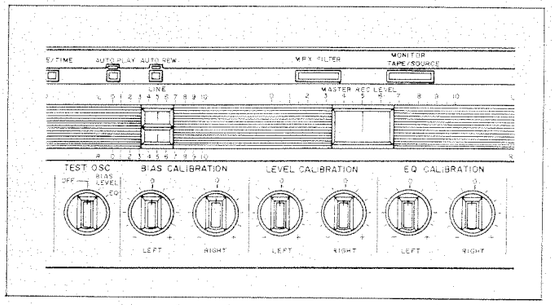
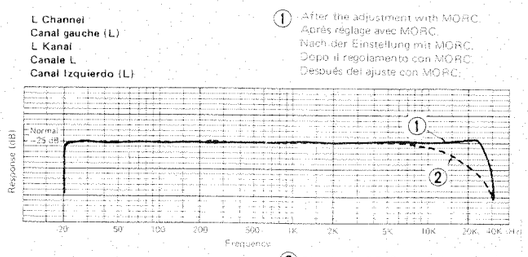


Fig.28/Abb.28



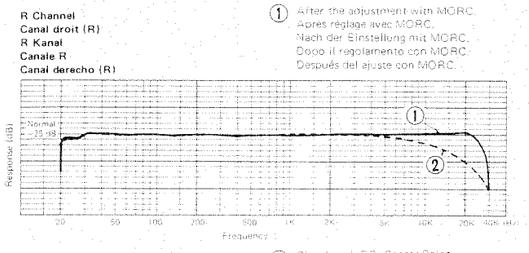
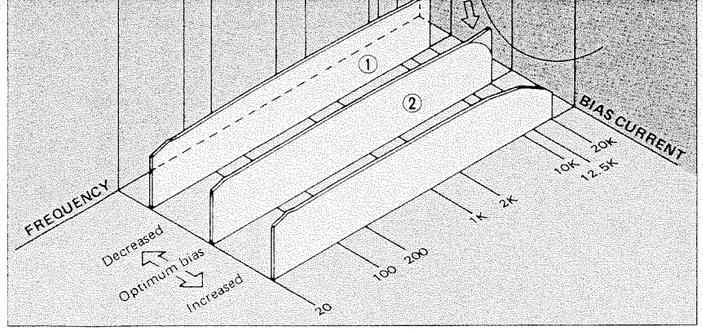


Fig.29/Abb.29

Fig.26/Abb.26

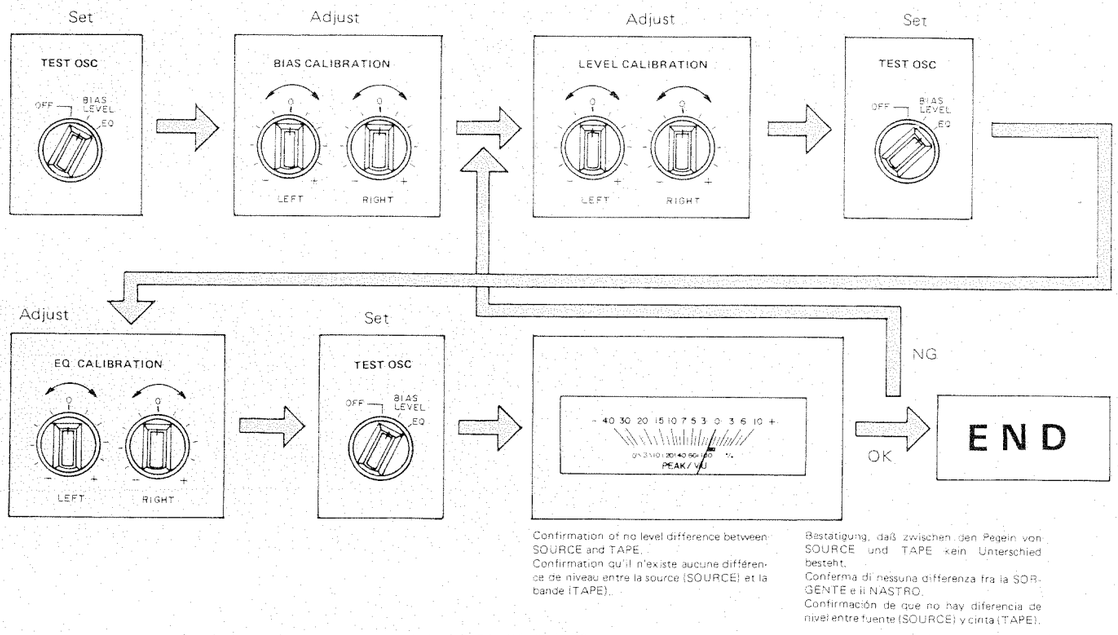


① With constant equalization, bias is reduced, proper frequency response obtained but distortion increases.
Avec une égalisation constante, la polarisation est réduite, la réponse en fréquence correcte est obtenue, mais la distorsion augmente.
Bei konstanter Entzerrung wird die Vormagnetisierung vermindert, der korrekte Frequenzgang wird erzielt, Verzerrungen werden jedoch erhöht.
Con un costante livellamento, bias viene ridotto, si ottiene una giusta risposta di frequenza ma la distorsione aumenta.
Con ecualización constante, la polarización es reducida, se obtiene apropiada respuesta de frecuencia pero la distorsión aumenta.

② Before equalization compensation (bias set for minimum distortion).
Avant la compensation d'égalisation (polarisation réglée pour une distorsion minimum).
Vor dem Entzerrungsausgleich (die Vormagnetisierung ist auf minimalste Verzerrungen eingestellt).
Prima della compensazione di livellamento (bias inserito al minimo di distorsione).
Antes de la compensación de ecualización (Polarización ajustada para mínima distorsión).

③ Bias optimized, equalization compensated to obtain linear frequency response.
Polarisation optimisée, égalisation compensée pour obtenir une réponse en fréquence linéaire.
Optimale Vormagnetisierung, kompensierte Entzerrung, für den Erhalt eines linearen Frequenzgangs.
Bias ottimale, livellamento compensato per ottenere una risposta di frequenza lineare.
Polarización optimizada, ecualización compensada para obtener una respuesta de frecuencia lineal.

Fig.30/Abb.30



Confirmation of no level difference between SOURCE and TAPE.
Confirmation qu'il n'existe aucune différence de niveau entre la source (SOURCE) et la bande (TAPE).

Bestätigung, daß zwischen den Pegeln von SOURCE und TAPE kein Unterschied besteht.
Conferma di nessuna differenza fra la SORGENTE e il NASTRO.
Confirmación de que no hay diferencia de nivel entre fuente (SOURCE) y cinta (TAPE).

Fig.31/Abb.31

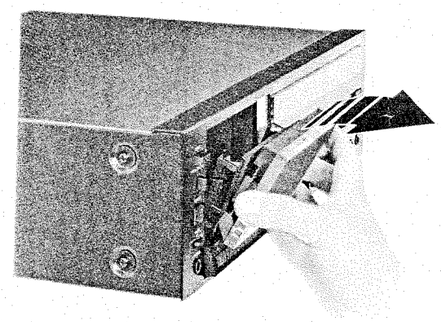


Fig.32/Abb.32

Tape Part Lifter
Dispositif de levage du patin de bande
Andrucк-Kissen-Heber
Linguetta sollevatrice del nastro
Almohadilla elevadora de la cinta

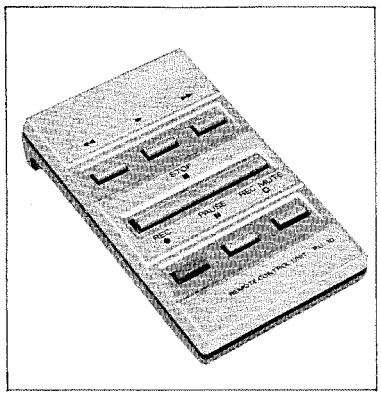
Pinch Roller and Capstan Shaft
Galet Presseur et axe de cabestan
Andruckrolle und Tonwelle
Rullino compressore e albero del rullo di trazione
Rodillo sujetador y eje de cabestrante

Erase Head
Tête d'effacement
Löschkopf
Testina di cancellamento
Cabeza de borrado

Record/Playback Head
Tête d'enregistrement/Reproduction
Aufnahme/Wiedergabekopf
Testina di registrazione/ascolto
Cabeza de grabación/reproducción

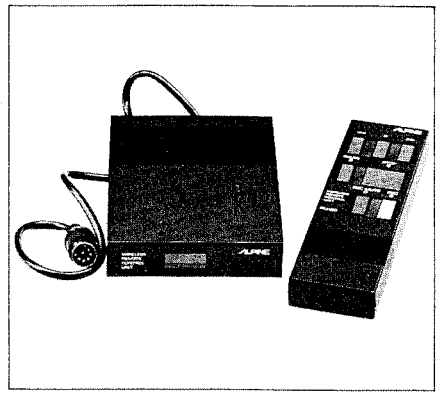
Fig.33/Abb.33

ACCESSORIES/ACCESSOIRES/ZUBEHÖR/ACCESSORI/ACCESORIOS



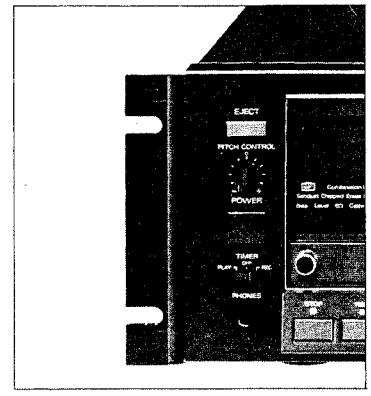
RU-10

- Remote control unit with a 5-meter cord
- Unité de commande à distance avec un fil de 5 mètres
- Fernbedienungseinheit mit 5 m Kabel
- Unità de telecomando con fili di 5 metri.
- Unidad de control remoto con cordón de 5 metros



RU-20B

- Wireless remote control unit
- Unité de commade à distance sans fil
- Drahtlose Fernbedienungseinheit
- Unità di telecomando senza fili
- Unidad de control remoto sin alambre.



RH-40

- Rack mounting kit
- Kit de montage en rack
- Rack-Befestigungs-kit
- Corredo per montaggio su rack
- Kit de montaje en bastidor

ALPINE ELECTRONICS INC.
Tokyo Office: 1-7 Yukigaya Otsuka-cho
Ota-ku Tokyo, Japan
Phone 03-727-5311 Telex 246-6076

Iwaki Office: Oyasaku Yoshima-cho
Iwaki-shi Fukushima, Japan
Phone 0246-36-4111 Telex 8927-61

ALPINE ELECTRONICS GmbH
Münsterstr. 330 D-4000 Düsseldorf
F.R. Germany
Tel. 0211-626806 Telex 8588 296 ALPI D

ALPINE ELECTRONICS OF CANADA, INC.
3475 14th Avenue, R.R. 1, Unionville,
Ontario L3R 2L6 Canada
Phone 416-475-7280 Telex 06986789

ALPINE ELECTRONICS OF AMERICA, INC.
LATIN AMERICAN DIVISION
19145 Gramercy Place
Torrance, California 90501
Phone 213-326-8000

68P52551F70-A

Printed by: Schaltungsdienst Lange, Berlin (GERMANY)